P-Channel 20-V (D-S) MOSFET, ESD Protection

GENERAL DESCRIPTION

The LT2349E is the P-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where high-side switching , and low in-line power loss are needed in a very small outline surface mount package.

FEATURES

- $R_{DS(ON)}$ ≦75mΩ@V_{GS}= -10V
- $R_{DS(ON)}$ ≦95mΩ@V_{GS}= -4.5V
- $R_{DS(ON)}$ ≦140mΩ@V_{GS}= -2.5V
- Super high density cell design for extremely low $R_{DS(ON)}$

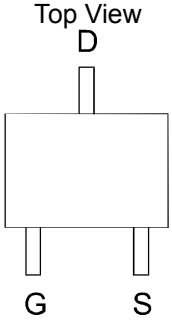
APPLICATIONS

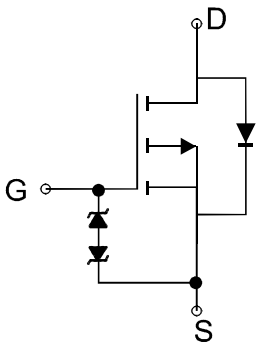
- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

PIN CONFIGURATION

(SOT-23)

Top View





Absolute Maximum Ratings (T_A=25℃ Unless Otherwise Noted)

Parameter		Symbol	Steady State		Unit
Drain-Source Voltage		V_{DSS}	-20		V
Gate-Source Voltage		V_{GSS}	±12		V
Continuous Drain Current(T_j=150℃)*	T_A=25℃	I_D	-1.88		A
	T_A=70℃		-1.5		
Pulsed Drain Current		I_{DM}	-10		A
Continuous Source Current (Diode Conduction)		I_S	-1.7		A
Maximum Power Dissipation*	T_A=25℃	P_D	0.63		W
	T_A=70℃		0.4		
Operating Junction Temperature		T_J	-55 to 150		℃
Thermal Resistance-Junction to Ambient*		$R_{\theta JA}$	**Typ**	90	℃/W
			Max	125	

*The device mounted on 1in^2 FR4 board with 2 oz copper

P-Channel 20-V (D-S) MOSFET, ESD Protection

Electrical Characteristics (T_A=25℃ Unless Otherwise Specified)

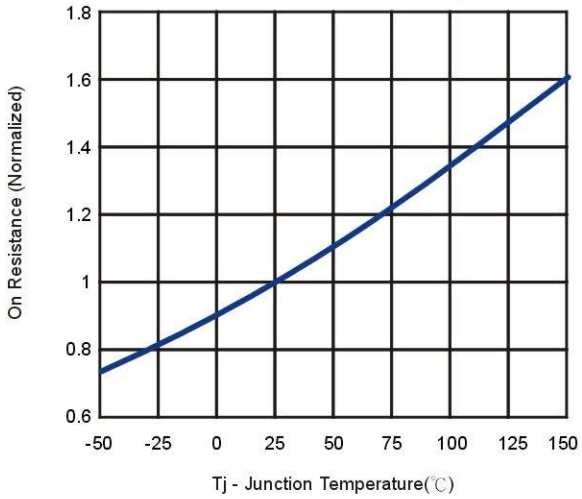
Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	-0.5		-1	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±12V			±15	μA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-30V, V_{GS}=0V			-1	μA
		V_{DS}=-30V, V_{GS}=0V T_J=70℃			-5	
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS}=-10V, I_D= -2.0A		65	75	mΩ
		V_{GS}=-4.5V, I_D= -1.3A		75	95	
		V_{GS}=-2.5V, I_D= -1.0A		100	140	
V_{SD}	Diode Forward Voltage	I_S=-1.7A, V_{GS}=0V		0.8		V
DYNAMIC						
Ciss	Input Capacitance	V_{DS}=-15V, V_{GS}=0V, f=1MHZ		427		pF
Coss	Output Capacitance			60		
Crss	Reverse Transfer Capacitance			15		
Rg	Gate Resistance	f=1MHz		9		Ω
Qg	Total Gate Charge	V_{DS}=-15V, V_{GS}=-10V, I_D=-20A		6.5		nC
Qgs	Gate-Source Charge			2.4		
Qgd	Gate-Drain Charge			1.5		
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=-15V, R_L =15Ω I_D=-1.0A, V_{GEN}=-10V R_G=6Ω		19		ns
t_r	Turn-On Rise Time			8		
$t_{d(off)}$	Turn-Off Delay Time			43		
t_f	Turn-Off Fall Time			4.4		

Notes: a. Pulse test; pulse width ≦ 300us, duty cycle≦ 2%

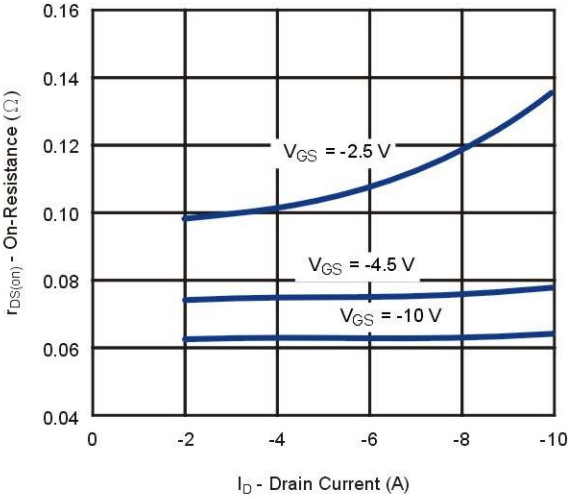
P-Channel 20-V (D-S) MOSFET, ESD Protection

Typical Characteristics (TJ =25℃ Noted)

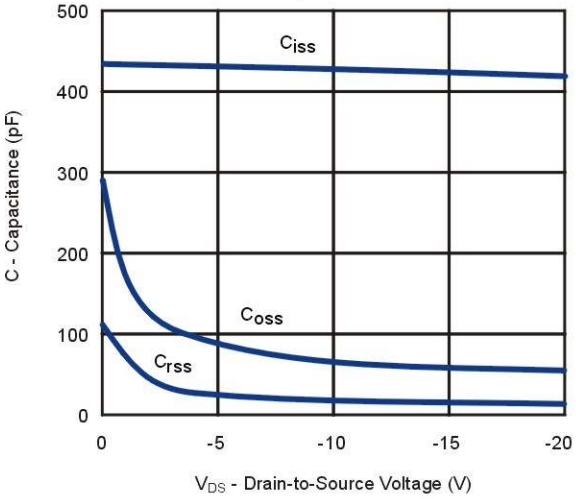
On Resistance vs. Junction Temperature



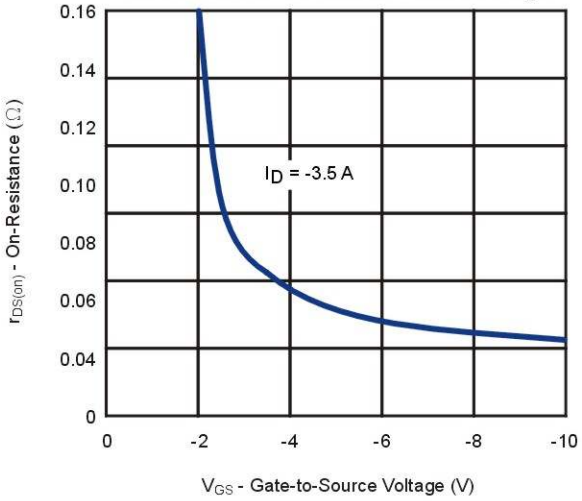
On-Resistance vs. Drain Current



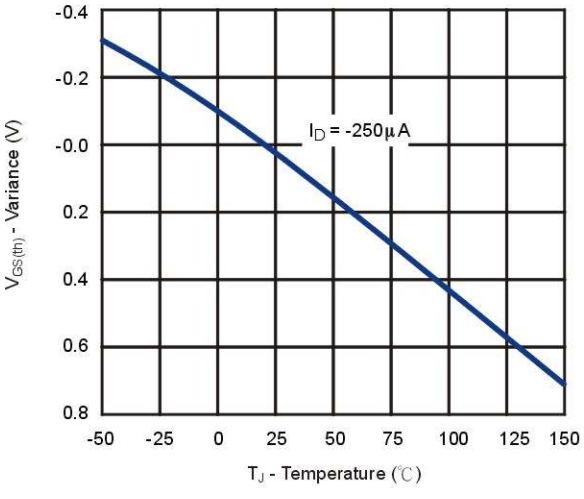
Capacitance



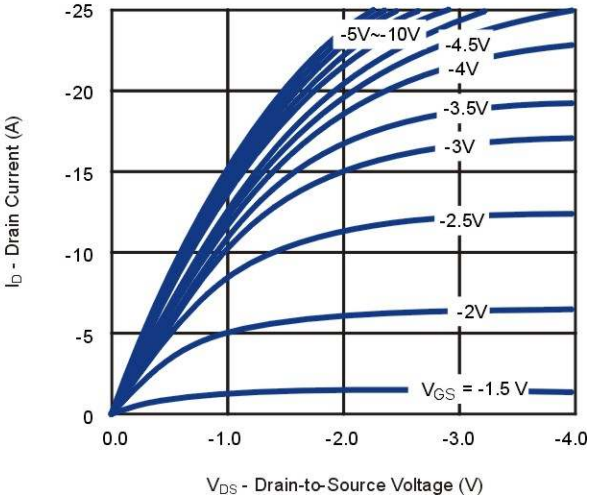
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



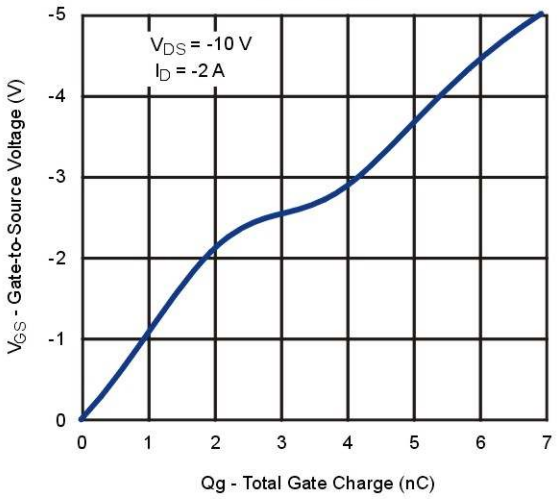
On-Region Characteristics



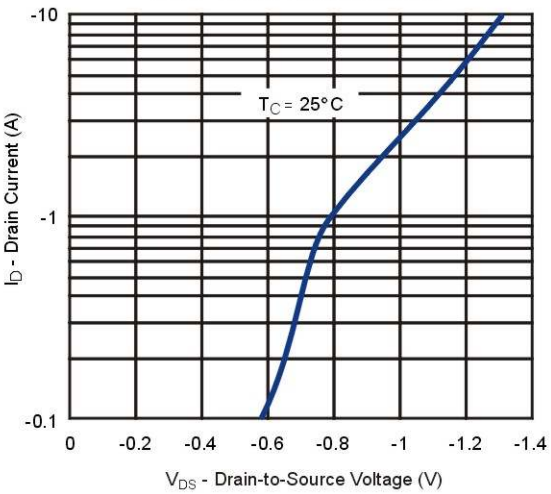
P-Channel 20-V (D-S) MOSFET, ESD Protection

Typical Characteristics (TJ =25℃ Noted)

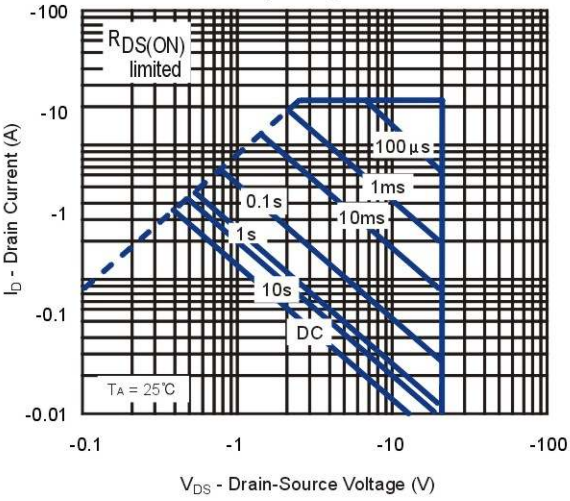
Gate Charge



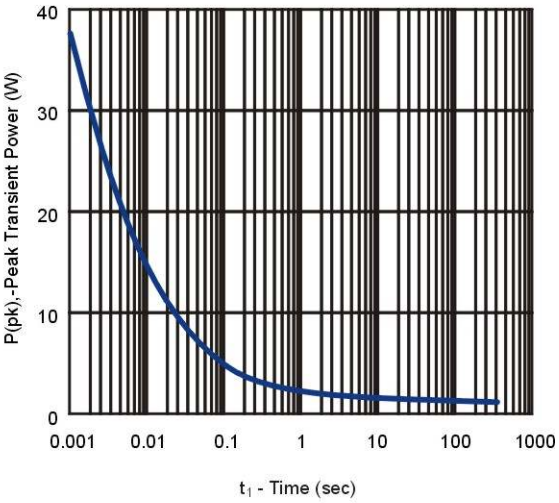
Body - Diode Characteristics



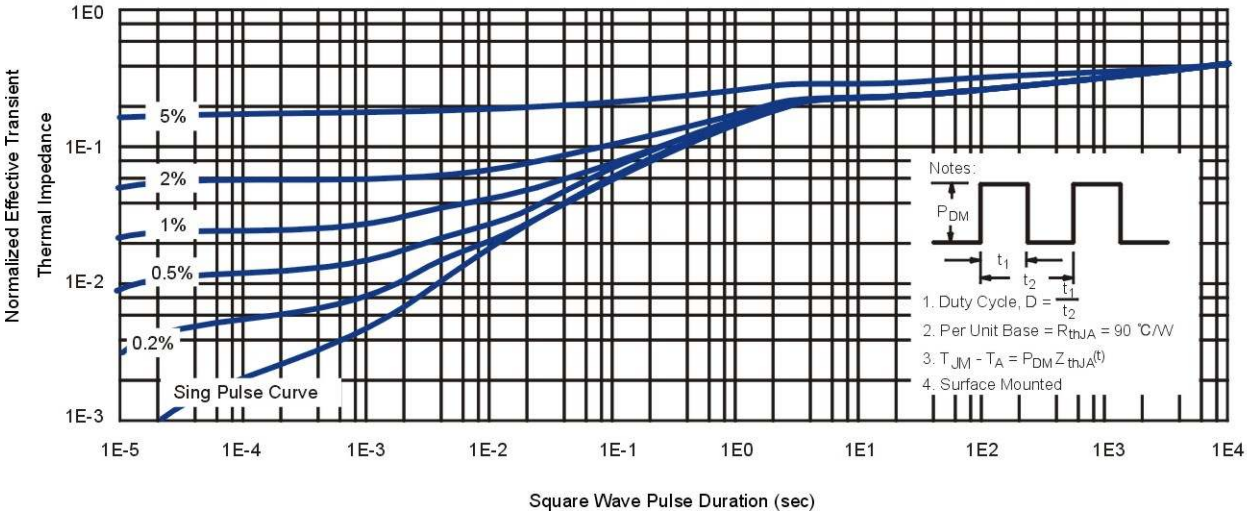
Maximum Forward Biased Safe Operating Area



Single Pulse Maximum Power Dissipation

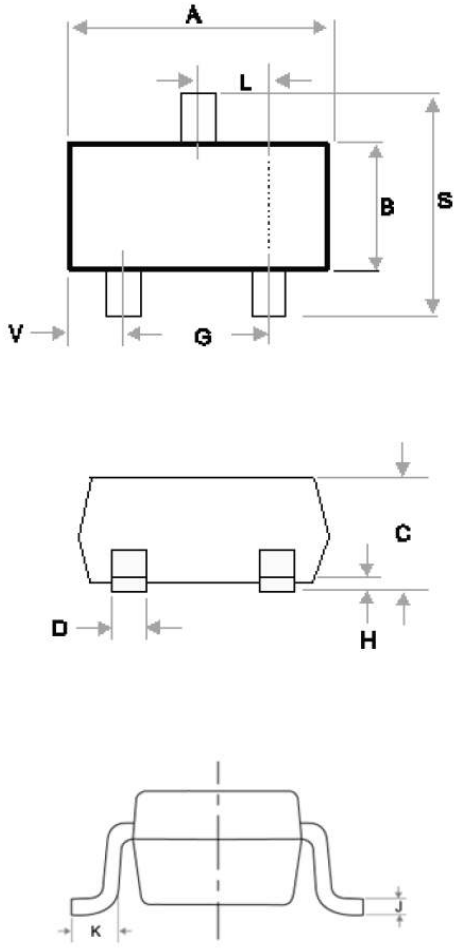


Normalized Thermal Transient Impedance, Junction-to-Ambient



P-Channel 20-V (D-S) MOSFET, ESD Protection

SOT-23 Package Outline



DIM	MILLIMETERS (mm)	
	MIN	MAX
A	2.80	3.00
B	1.20	1.70
C	0.90	1.30
D	0.35	0.50
G	1.78	2.04
H	0.010	0.15
J	0.085	0.20
K	0.30	0.65
L	0.89	1.02
S	2.10	3.00
V	0.45	0.60

P-Channel 20-V (D-S) MOSFET, ESD Protection

Important Notice and Disclaimer

LSC reserves the right to make changes to this document and its products and specifications at any time without notice. Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.

LSC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does LSC assume any liability for application assistance or customer product design. LSC does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application.

No license is granted by implication or otherwise under any intellectual property rights of LSC.

LSC products are not authorized for use as critical components in life support devices or systems without express written approval of LSC.